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EUROCAP Program - DOURBES Station

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Final Report

Sept.90 - Nov.92

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REPORT DOCUMENTATION PAGE

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Title of Proposal:

EUROCAP Program DOURBES Station

Report Number:5 Period Covered:from sept.6,90 to sept.5,92

Name of Institution: ROYAL METEOROLOGICAL INSTITUTE

Principal Investigator: Eng.Dr. J.-C. Jodogne

Abstract:

Vertical soundings were recorded hourly with the Digisonde 256 and the Artist facility during the period of september 1,1990 to sept 6,1992. During these twenty four months, the Digisonde 256 worked perfectly and only few hourly records are missing. Interruptions of the recording were mainly due to short mains failures and in dec.91 to instalation of a GPS card and new related software in order to supply a precise pulse each second from the satellites. This enables the success of two oblique sounding campaigns. Moreover data of quaterhourly ionogram were also recorded for some periods.

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The Dourbes Station use a Digisonde 256 with an Automatic Real Time Ionogram Scaler with True Height (from University of Lowell,Center of Atmospheric Research) in order to provide the scaled parameters of the hourly ionograms. From the recorded data on magnetic tapes, a software program called ADEP (also from University of Lowell,Center of atmospheric Research) allows editing the ionograms and extracting the main parameters which are recorded in Ascii files on 5.25 diskettes AT compatible.

The ionograms are produced with 100khz steps in frequency starting at 1 Mhz with height steps of 5 km starting at 60 km up to 700 km. The repetition rate used is 100 cycles per second and usually 64 pulses contribute to one frequency. Phase coding and frequency search are two techniques in use routinely. The antennas array permits to distinguish between ordinary and extraordinary echoes and different directions of arrival.

From oct. 22,1991 at 10z to nov 1,1991 quaterhourly digigrams were recorded. At the end of december 91, installation of a GPS card and improvment of the digitalization of the received signals lead to the success of the oblique sounding link from Dourbes to Roquetes(Spain).In addition to this, implementation of a new software in the digisond 256 allows to produce high precision digigrams to study the valley problem. The recording media was then changed and it introduce some delay for the sending of the diskettes.

Since the begining of the contract, it happends about fifteen interruptions of recording among which a majority due to mains voltage failure. One occurs by magnetic recorder failure and one due to work on the Digisonde 256 as mentionned before. However, the digital sounder worked perfectly during the contract duration and all data are of very good quality. Some scaling mistakes by the Artist automatic program were seen. All these data are manually checked and then published by the Institute and available on tape.

Dr.J.-C. Jodogne